climates, wet and dry climates, cold and warm climates, but we shall also have to characterise a climate by its electrification and define with greater exactness the terms "relaxing" and "bracing."

Perhaps we shall also be able to speak of a "spending" and a "saving" climate. We must not separate one characteristic of the climate from another and prefer it; in nature all phenomena work more or less together, they depend on one another and exercise mutual influences on one another. The electric conditions of the air are indicated by other meteorologic records, and hence we have important sources of information which ought not to be neglected, as our methods of making direct electric observations are not yet satisfactory. One can, from the daily increase or diminution of pressure, warmth and moisture of the air, say something of its electrification.

In this connection it is of no importance whether the barometer is high or low, but whether it rises or falls. It is not important to know whether the moisture of the air is great or not; it is important to know whether the moisture decreases or increases, whether the process of condensation or of evaporation prevails.

Dr. Schliep here described at length the meaning of dew-point in hygrometric observations. He exhibited also a reduction disc made by Lambrecht, of Göttingen, a sort of circular slide rule, to facilitate the reduction of observations. He showed that the atmospheric electrification becomes negative if the average temperature and dew-point rise and if the barometer falls at the same time. If, however, the temperature and dew-point fall whilst the barometer rises, one may assume a positive electrification. He pointed out on the curves which represent his registrations at Baden during the previous ten years, that the air-pressure on one hand, and the temperature and moisture on the other, altered mostly in opposite directions. It was noticeable also that an exceptional steadiness for a few days was accompanied by the reverse of these movements as soon as the lines went far asunder. The graphic representations of meteorological phenomena show more than one would think at first sight. More plainly than lists of numbers, they allow a comparison of climatic conditions of different years or of certain periods with the statistics of the prevalent diseases during those periods.

Without a good graphic representation such statistics are never complete, however valuable the material which has been collected may be. Thus, for example, consider the work of Hippius, published in the *Archives for Clin. Medic.* vol. xl., about dysentery and meteorological influences upon it, in which there was an inquiry about the relation between meteorological changes and bleedings of the lungs with no apparent result. May not the failure of this inquiry be due to the fact that the meteorologic information was incomplete?

Dr. Schliep finishes his paper by pointing out the importance of the general meteorological observations at watering-places being under a central governmental control. The health resorts ought not to rest until they have obtained this aid from Government. But he distinguishes general meteorology from the simple kind of observation which it is in the power, and ought to be the duty, of every medical man to make for himself.

JOHN PERRY.

PROFESSOR ÉMILE BLANCHARD.

BY the death on February 11, at the ripe age of 84 years, of Prof. Émile Blanchard, France has lost the *doyen* of its zoologists, the French Academy one of its oldest and most esteemed members, and the Paris Museum a famous entomologist. Blanchard's career was a somewhat remarkable one, and at the same time a noble example to others; for he rose to distinction from the ranks, and, when stricken by one of the most terrible of all afflictions, never swerved for an instant from the course he had to run.

Entering, at the age of fourteen, the department of entomology of the Paris Museum, in the humble capacity of what would be termed an "attendant" in our own Museum, Blanchard soon developed such a capacity for zoological work that he was transferred to the scientific staff. His first great chance of distinguishing himself occurred when he accompanied, in 1844, Prof. H. Milne-Edwards on his celebrated expedition in the *Santa Rosalia* to Sicily, for the purpose of studying the marine fauna of the coasts. Shortly after this he was appointed Professor of Entomology to the Museum; and in 1862 received the honour of election to the French Academy of Sciences. Throughout life his chief study was entomology, the Coleoptera being his especial favourites; but he also devoted a considerable amount of attention to other branches of zoology, as well as to comparative anatomy, and in his latter years entered on the study of the geographical distribution of animals, both in past and present times. His works on Madagascar and New Zealand are well-known examples of his devotion to the latter branch of science. As a token of the esteem in which his labours were held by his fellow-workers, it may be mentioned that a genus of Carboniferous Neuroptera was named *Blanchardia* in his honour; while several of the fossil birds from the Miocene of France described by Milne-Edwards, such as *Anas blanchardi* and *Palaeortyx blanchardi*, received their specific titles after the subject of this notice. In addition to purely scientific memoirs (of which a long roll stands against his name) Prof. Blanchard was a frequent and admired contributor to the *Revue des Deux Mondes* on general subjects.

But the most remarkable circumstance connected with a large portion of his work yet remains to be told. In early life Blanchard was gifted with extraordinary acuteness of vision, and was thus enabled to make dissections of extreme delicacy (of which he has left numerous drawings and sketches) without the aid of lenses. In fact, his eyes were described by one of his early contemporaries as veritable microscopes. At the age of forty his visual powers showed serious signs of weakening. Year by year the failure of power increased, with the result that at 45 he became nearly, and at 50 totally blind. In the words of Professor Gaudry, "What more frightful affliction could have befallen a man whose life was passed in the investigation of Nature's secrets? The existence of a naturalist, who seemed specially favoured by his natural gifts and by the honours received at an age when they are obtained by few, was delivered over to the misery of darkness. If only Blanchard could have still enjoyed the delights of family life, if, while unable to see them, he could have listened to the voices of a devoted wife and beloved children! But all was gone; he no longer saw, no longer heard anything! The visits of a few friends could alone, from time to time, afford solace to his lonely existence."

Amid the unfeigned sorrow of his *confrères*, his remains, on February 14, were consigned to their last resting place.

Perhaps his best-known works are "Histoire des Insectes," 1845; "Catalogue des Coléoptères du Museum d'Histoire Naturelle de Paris," 1850; and "Metamorphoses des Insectes," 1868. R. L.

DRS. C. T. R. LUTHER AND G. RUMKER.

WITHIN a few weeks, two observatories which have played a worthy part in the past history of astronomy have, by the death of their respective directors, suffered a notable loss, and science will deplore the removal of two well-known names from the roll of worthies, who are remembered with gratitude for much indefatigable, if not brilliant, work.

For forty-eight years Dr. Carl Theodor Robert Luther worked unremittingly with the small instruments of the Düsseldorf Observatory, and few men have won so much satisfaction and rendered such essential services with apparently inadequate means. When, a half century ago, he began to direct the fortunes of the little Observatory of Bilk, the discovery and the observation of small planets still awakened considerable interest in the astronomical world, and he perceived that a small observatory, somewhat meanly equipped, could not undertake a more meritorious service than to devote itself methodically to the study of the movement of these bodies. Resolved to devote himself to this work, he never swerved from it. How well he worked with a six foot equatorial and a simple ring micrometer will readily be admitted by those who have had to use his observations in the discussion of planetary orbits. In this one subject, which he had made his own, his untiring devotion enabled him to compete in accuracy, and in quantity of observations, with other observatories possessing greater optical power and employing more delicate apparatus. He lived to see the branch of astronomical science that he loved and supported become somewhat discredited by the very wealth of material with which the possessors of larger optical means and improved star-charts were able to startle and to overwhelm plodding computers and observers. If observation did outrun computation, Luther, however, made some effort to withstand the onrush, and he succeeded in placing the theory of five of the planets—Hebe, Parthenope, Melete, Danae and Glauke—in such a satisfactory position that they are not likely to be lost.

But Luther's work began long before he went to Bilk. He was attached to the staff of the Berlin Observatory before Neptune was discovered. He took a share in the construction of the Berlin star-charts, that rendered the actual detection of the planet so simple; and every one who has used Olbers' method for computing comet orbits will recall with satisfaction Barker's Table of Parabolic Anomalies, "von neuem berechnet von Herrn Stud. Luther."

Modest honours followed Luther in his simple-minded devotion to astronomy. In 1854, he was elected a Foreign Associate of the Royal Astronomical Society, and in the following year the Bonn University elected him a Doctor of Philosophy. Seven times did the Paris Academy vote him the Lalande Prize for his discoveries, and when the same Academy struck a medal to commemorate the completion of the first hundred small planets, his portrait appeared on the medal side by side with those of Hind and Goldschmidt, the representatives of Germany, England and France in this special field of research.

The death of Dr. George Rümker, Emeritus Director of the Hamburg Observatory, is also announced—a name long and honourably connected with the Hamburg Observatory, and associated with much good work. The late director was born at the Observatory, where his father, after his return from Paramatta, was in residence. Early trained to astronomical methods, Dr. George Rümker had the advantage of experience in various observatories, spending some time at the Durham Observatory under the late Prof. Chevallier. On his return to Germany he was attached to the Hamburg Observatory, and busied himself with the preparation of a catalogue of circumpolar nebulæ. After his appointment as director, the energies of the observatory have been mainly devoted to the observation of planets and comets. These observations, which have been mainly published in the *Astronomische Nachrichten*, display a considerable amount of activity; but in addition to researches of a purely astronomical character, Dr. Rümker had given very considerable attention to all questions connected with the improvement of navigation, and to the testing of instruments required in the service of the marine. The rapid development of the Port of Hamburg has made the testing of chronometers and accurate time distribution matters of prime importance, and the late director fully recognised the desirability of ministering to the necessities of the port.

DR. THOMAS PRESTON, F.R.S.

WITH sincere regret we announce the death of Prof. Thomas Preston, which occurred at his residence in Dublin on March 7. Still a young man, the event, although preceded by a tedious illness, came as a shock to his friends, and we believe will be learned with sorrow by every scientific man in this country. Abroad, too, his name had recently become well-known in connection with his researches on radiation in the magnetic field.

Thomas Preston was born in co. Armagh in 1860. He graduated both in the Royal University and in Trinity College, Dublin, in each University gaining high distinction in mathematics and experimental science. The first edition of his well-known "Theory of Light" appeared in 1890; his "Theory of Heat" in 1895. He filled the post of Science and Art Inspector for Ireland since 1894. He held a Fellowship in the Royal University, and also the degree of Doctor of Science of that University; and was elected a Fellow of the Royal Society in 1898.

What great promise was in Thomas Preston is known to all who are acquainted with the good scientific work he had already accomplished. The Royal Dublin Society recently conferred upon him the Boyle Medal for distinguished work in the domain of pure science. On that occasion the Science Committee of the Society reported on his work in terms a quotation from which will best serve to convey in a brief notice the scope of Preston's contributions to science. The report more especially relates to his services in connection with radiation in a strong magnetic field, and summarises the part he took in this recent branch of research, as follows:—

"Early in 1897 the broadening of the spectral lines arising from radiation in a strong magnetic field was announced by Dr. P. Zeeman; and about the middle of that year, Dr. Zeeman further announced the fact that the triple nature of some of these lines had been established by aid of the differing polarisation of the central and lateral bands. This important experimental work was the first completely successful accomplishment of an experiment undertaken by Faraday, so long ago as 1862. The theoretical aspect of Zeeman's first experiments had been examined by Prof. Lorentz and by Dr. Larmor. The threefold nature of the broadened lines as well as their polarisation phenomena had been predicted by these mathematicians, and also the probability that the change of wave-length introduced by the magnetic force should be proportional to the square of the wave-length of the affected lines.

"Such, briefly, was the state of the inquiry, when Prof. Preston—working with the Rowland Grating of the Royal University—brought his first research before this Society towards the close of 1897. ('Radiation Phenomena in a Strong Magnetic Field,' *Trans.* R.D.S. vol. vi. Ser. ii. p. 358).

"Members of this Society who were present on that occasion will recollect that they were treated to no second-hand account of the phenomena, but were shown—a feat not before attempted—the triplication and quadruplication of the lines of cadmium and zinc, by means of photographs projected on the screen.

"In this communication, Prof. Preston not only showed that he had attained a higher degree of resolution of the lines than had up to this been accomplished, but he was able to announce the existence of quartet and sextet forms for the first time. In his paper he seeks for explanation of the quartet variation from the normal triplet, and the fact that the difference of wave-length introduced by the magnetic force is not proportional generally to the square of the wave-length (as the simple theory seemed to suggest) was forced upon him at this early stage of his work.

"Although these matters were laid before the Royal Dublin Society in December 1897, Prof. Preston can lay still earlier claim to these observations, as appears from a short communica-